Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

Item ID: D206-667-203BL **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 3/24/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start

Approvals: **Process Plan:** [signature] **Date:** 11-03-4 **Tooling:** _____ **Date:** _____ **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	**Revision Nbr**								
D206-667-247									
100	DOCUMENT CONTROL	0.00							
DC	**Memo**	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D206-667-203 CHG003								
110	BENDING MACHINE - CROSSTUBES	0.00							
CNC Bend 2	**Memo**	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D206-667-243 using CNC bender program D206-667-203								
120	QC15- Crosstube Dimensional Check	0.00							
QC	**Memo**	0.00							
Quality Control									

[signature] for BG 11-3-18

11/03/17

[signature] 11-3-4

(HV)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

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Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

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Run Start

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130		0.00							
Crosstubes	Crosstubes								
Crosstubes	**Memo**	0.00							

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 and drill table DT8577 and tower holes #6 as per QSI0010 and as per Dwg D206-667-243. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D206-667-243. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243

6-Drill Fwd rivet holes using drill Jig DT8789FWD as per Dwg D206-667-143.Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D206-667-243.

8-C'sink holes as per Dwg D206-667-243.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-243 Inside of Cuff(Donot engrave on outside of tube)

10 -Deburr & Inspect for surface damage. Repair damage within limits as per

SAD 11-03-08

SAD 11-3-7

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

Item ID: D206-667-203BL **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

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Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	Dwg D206-667-243								
140 HandFXtube	Crosstubes Chemical Conversion	0.00	SAN	11-03-08		(1)			
Hand Finishing Crosstubes	**Memo**	0.00							
150 QC	QC3- Inspect Part Finish	0.00	Sw 03/09						
Quality Control	**Memo**	0.00							
160 QC	QC5- Inspect part completeness to step on W/O	0.00	S 11/03/09			(1)			
Quality Control	**Memo**	0.00							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

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Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Outsource process - NDT per QSI038 4.1	0.00				CL	11/03/10		(1)
Outsource2	**Memo**	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038Or Issue P/O: 13641 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
180	Packaging	0.00					11/3/11		(1)
Packaging	**Memo**	0.00							
Packaging	Ensure copy of NDT results attached to work order.								
190	QC5- Inspect part completeness to step on W/O	0.00					11. 03 11		(1)
QC	**Memo**	0.00							
Quality Control	Ensure results are as per Dwg D206-667-243								

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W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

Item ID: D206-667-203BL **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 3/24/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	SprayPaint	0.00				25	11	03	10 (x1)
SprayPaint	**Memo**	0.00							
Spray Painting	1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: Start Time:_____ Finish Time:_____ PAINT: Start Time:_____ Finish Time:_____								
210	QC14- Inspect Spray Paint	0.00							
QC	**Memo**	0.00							
Quality Control	Wrap in plastic bag to protect from scratches								

Primer: 115967
Paint: 115985
Clear: 115949

11 03 11 (1)

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W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

Item ID: D206-667-203BL **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 3/24/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220		0.00							
Crosstubes	Crosstubes					RT	11-03-16		
Crosstubes	**Memo**	0.00							
Crosstubes	1-Install nut plates as per Dwg D206-667-243.								
230		0.00							
Crosstubes	Skidtubes								
Crosstubes	**Memo**	0.00							
Crosstubes	1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (3) top holes should be facing up. RT 11-03-15 A/R Magnobond 6398 : 116227								
	2-Install supports and clamps as per Dwg D206-667-243. Torque clamps to 80-100 in lb RT 11-03-16								

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W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

Item ID: D206-667-203BL **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 3/24/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240 QC Quality Control	QC5- Inspect part completeness to step on W/O **Memo**	0.00 0.00							
250 Packaging Packaging	Pick Kit **Memo**	0.00 0.00				11/3/18			
260 QC Quality Control	QC4- 100% Inspect kits for completeness **Memo**	0.00 0.00							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 67043

Friday, March 04, 2011 7:58:17 AM

Item ID: D206-667-203BL **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 3/24/2011 **Req'd Qty:** 1.00 **Customer:**

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Run Start

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00				11/3/21			
Packaging	**Memo**	0.00							
Packaging	Identify and pack for shipping as per PPP D206-667-203 Location: D14 PPP Rev:								
280	QC21- Final Inspection - Work Order Release	0.00				11/3/21			
QC	**Memo**	0.00							
Quality Control						CL 11103121			

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

Friday, March 04, 2011 7:58:24 AM

Work Order ID: 67043

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Required Date:** 3/24/2011

Start Qty: 1.00 **Required Qty:** 1.00

Comments: IPP Rev:A 10.10.29 now at chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D206-667-203TRN		Manufactured	No			220	Each	2.0000	1	1			
Crosstube Turning Detail													
				Location		**Loc Qty**		**Loc Code**					
				LG	B66431	2							
					65133	1							
					65134	1							
D2873-043		Manufactured	No			220	Each	24.0000	2	2			
Nut Plate Assembly													
				Location		**Loc Qty**		**Loc Code**					
				LG		22							
					63497	2							
					65375	20							
				ST		2							
					60981	2							
D2873-045		Manufactured	No			220	Each	24.0000	2	2			
Nut Plate Assembly													
				Location		**Loc Qty**		**Loc Code**					
				LG		24							
					60982	4							
					63498	1							
					65132	19							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

Friday, March 04, 2011 7:58:25 AM

Work Order ID: 67043

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Required Date:** 3/24/2011

Start Qty: 1.00 **Required Qty:** 1.00

D2892-1	Manufactured	No		230	Each	30.0000	2	2

Support

AT 11-03-15

Location	Loc Qty	Loc Code	
LG	30		
41986	2		
42785	18		
62592	10		x2

D3595-063-450	Manufactured	No		230	Each	60.3390	4	4

RUBBER CUSHION

B67067+1

RT 11-03-15

Location	Loc Qty	Loc Code	
LG	51.33897368		
53775	5.97897368		
58161	3.56		
59580	0.12		
61465	4.68		
63960	10		
65656	27		x3
ST415	9		
64171	8		
64300	1		

MS20601-AD4W10	Purchased	No		230	Each	150.0000	14	14

RIVET

RT 11-03-15

Location	Loc Qty	Loc Code	
LG051	150		
114245	2		
115405	2		
115881	16		
116186	30		x9
116767	100		x10

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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NOTE: Date & initial all entries

Picklist Print

Friday, March 04, 2011 7:58:25 AM

Work Order ID: 67043

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Required Date:** 3/24/2011

Start Qty: 1.00 **Required Qty:** 1.00

MS21920-22	Purchased	No		230	Each	56.0000	4	4

Clamp(per MIL-DTL-8783C)

RT 11-03-15

Location	Loc Qty	Loc Code
LG	56	
114077	6	
116207	50	

x 4

AN5-10A	Purchased	No		250	Each	250.0000	10	10

Bolt

11/3/18 SP

Location	Loc Qty	Loc Code
ST337	250	
115589	50	
115700	50	
116704	50	
116924	50	
117010	50	

Paste 2

10

AN5-32A	Purchased	No		250	Each	147.0000	4	4

Bolt

11/3/18 SP

Location	Loc Qty	Loc Code
ST340	147	
115016	36	
115108	50	
115589	60	
115698	1	

4

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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NOTE: Date & initial all entries

Picklist Print

Friday, March 04, 2011 7:58:26 AM

Work Order ID: 67043

Parent Item: D206-667-203BL

Parent Item Name: Crosstube Aft, Blue

Start Date: 3/4/2011 **Required Date:** 3/24/2011

Start Qty: 1.00 **Required Qty:** 1.00

AN5-34A Bolt	Purchased	No		250	Each	88.0000	4	4 11/3/18

Location	Loc Qty	Loc Code
ST340	88	
113149	2	
115835	20	42
116003	20	
116191	6	
116704	20	
117010	20	

AN960JD516 NAS1149D0563J Washer	Purchased	No		250	Each	34.0000	18	18 M116360 11/3/18

Location	Loc Qty	Loc Code
ST	34	
103694	18	
107534	12	
109287	4	

MS21042L5 Nut	Purchased	No		250	Each	996.0000	4	4 11/3/18

Location	Loc Qty	Loc Code
ST139	26	
114813	26	
ST300	970	
115594	274	4
116105	496	
116548	200	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

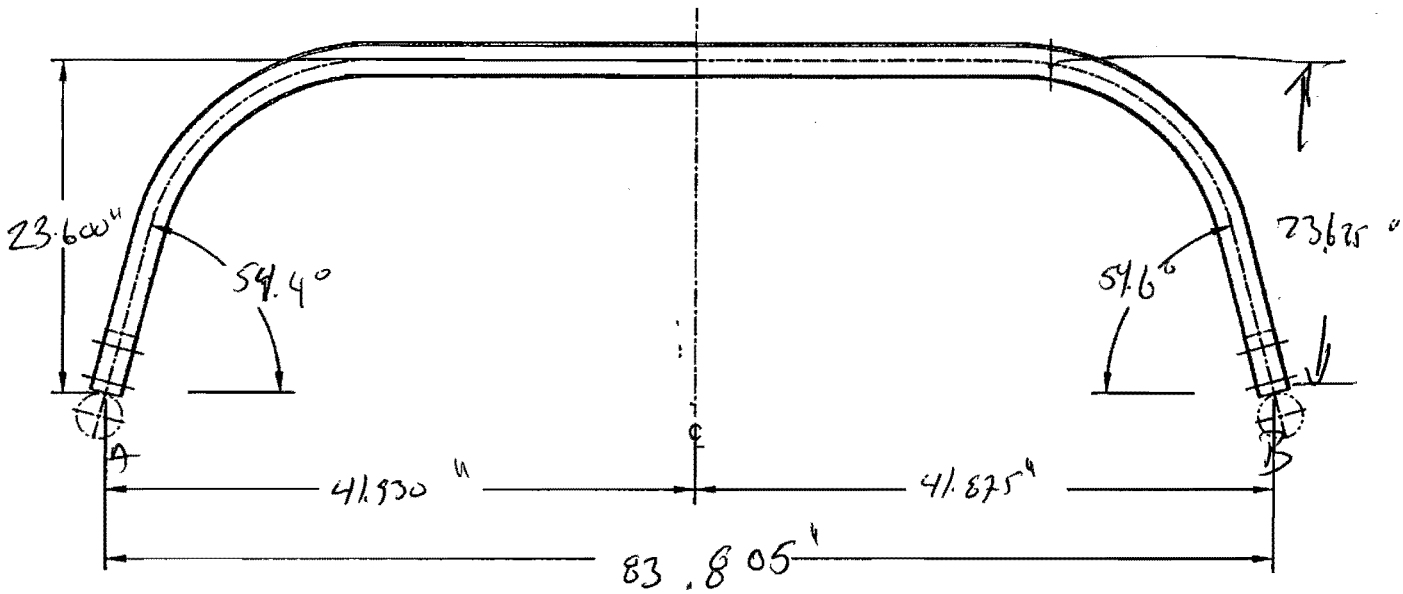
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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	47043
Description: Crosstube High Aft (206L)	Part Number:	D206-667-203
Inspection Dwg: D206-667-243 **Rev:** C		Page 1 of 1

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	41.79	42.05
Angle	54	56
Total Span	83.58	84.1



Comments

QC15 Inspection	
Date	11/03/07

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.17	Dwg Rev updated	KJ	
C	09.12.14	Dimensions update per Dwg Rev C	KJ	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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NOTE: Date & initial all entries

Item	Qty -243	Part Number	Description
1	X	D206-667-243	CROSSTUBE ASSEMBLY (206L HIGH AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6004-115
 FINISHED LENGTH = 104.91±0.020
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) UNITS: INCHES UNLESS OTHERWISE NOTED.
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
7) WEIGHT: 21.9 lbs
8) PART IS SYMMETRIC ABOUT CENTERLINE.
9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 67043
11-03-4

RELEASED

REV.	DESCRIPTION	BY	DATE
C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-450 WAS D2856-400-773 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN 4-3, C5-3, D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17

DESIGN		**DART AEROSPACE LTD**	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG. APPR.		D206-667-243	SHEET 1 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06		

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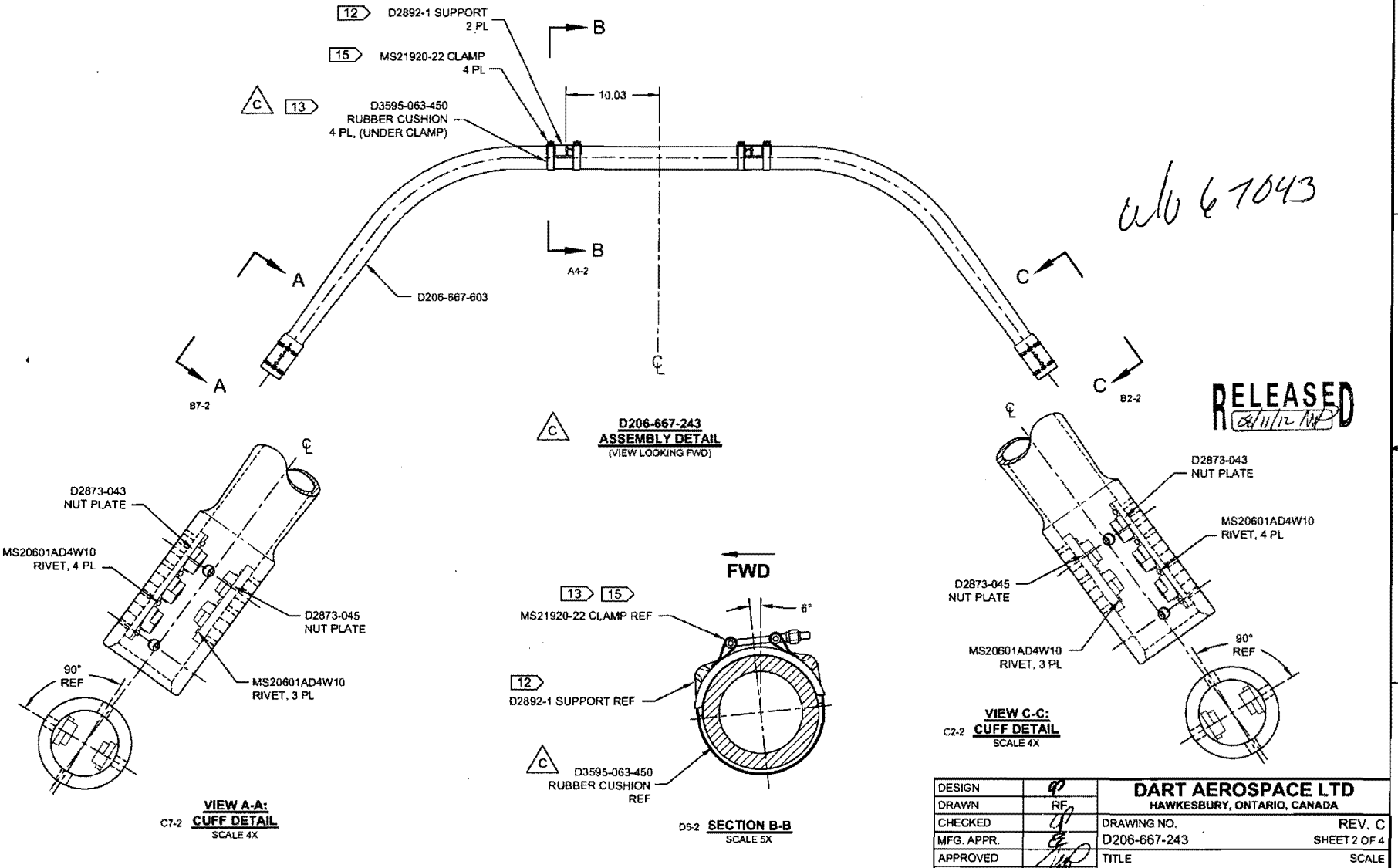
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries



W6 67043

RELEASED 04/11/12 NF

DESIGN		DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG. APPR.		D206-667-243	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06		

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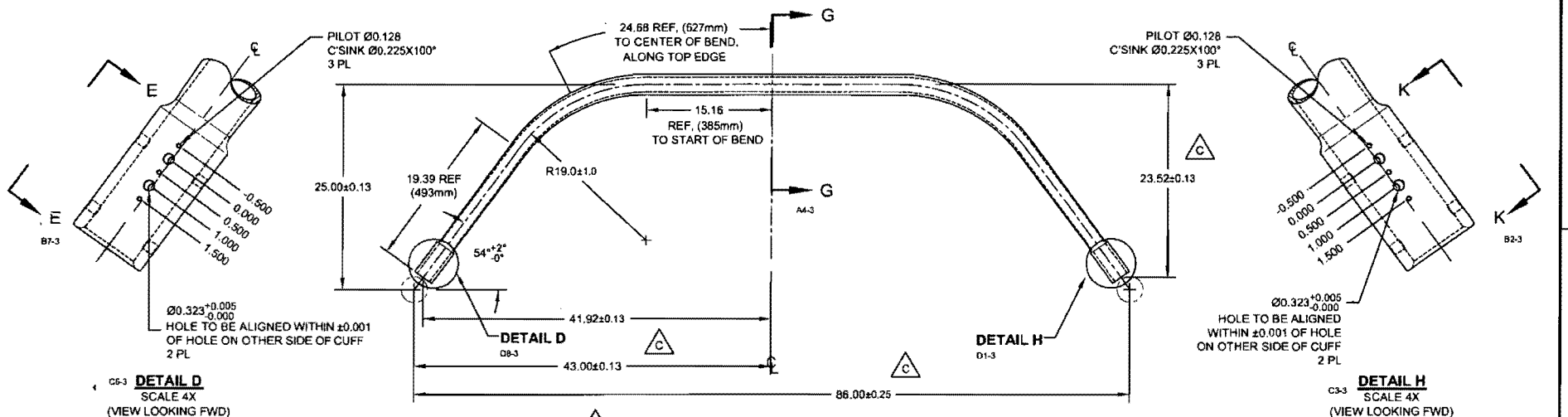
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

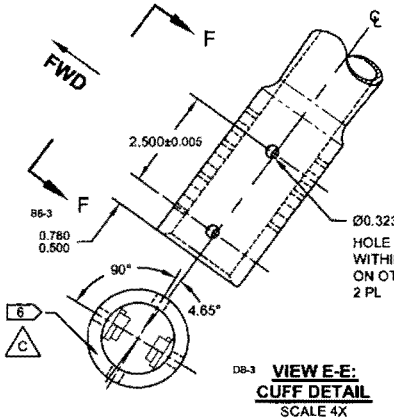
NOTE: Date & initial all entries



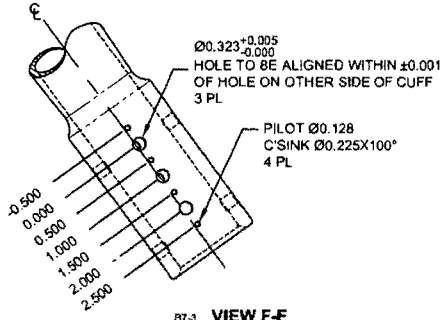
C5-3 **DETAIL D**
SCALE 4X
(VIEW LOOKING FWD)

C3-3 **DETAIL H**
SCALE 4X
(VIEW LOOKING FWD)

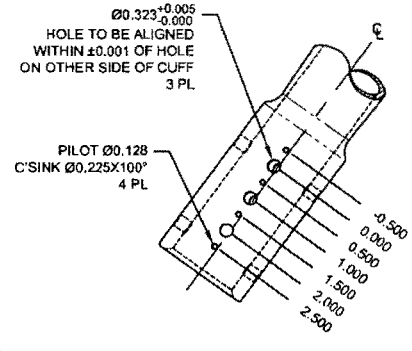
D206-667-603
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)



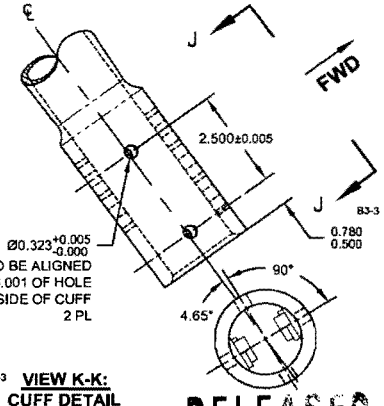
D8-3 **VIEW E-E:**
CUFF DETAIL
SCALE 4X



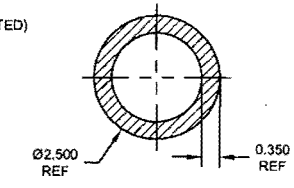
B7-3 **VIEW F-F**
(VIEW LOOKING AFT, ROTATED)



B2-3 **VIEW J-J**
(VIEW LOOKING AFT, ROTATED)



D1-3 **VIEW K-K:**
CUFF DETAIL
SCALE 4X



D4-3 **SECTION G-G**
SCALE 5X

RELEASED
08/11/12

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	
CHECKED		DRAWING NO. REV. C
MFG. APPR.		D206-667-243 SHEET 3 OF 4
APPROVED		TITLE SCALE
DE APPR.		CROSSTUBE ASS'Y (206L HIGH AFT) NTS
DATE	08.11.06	

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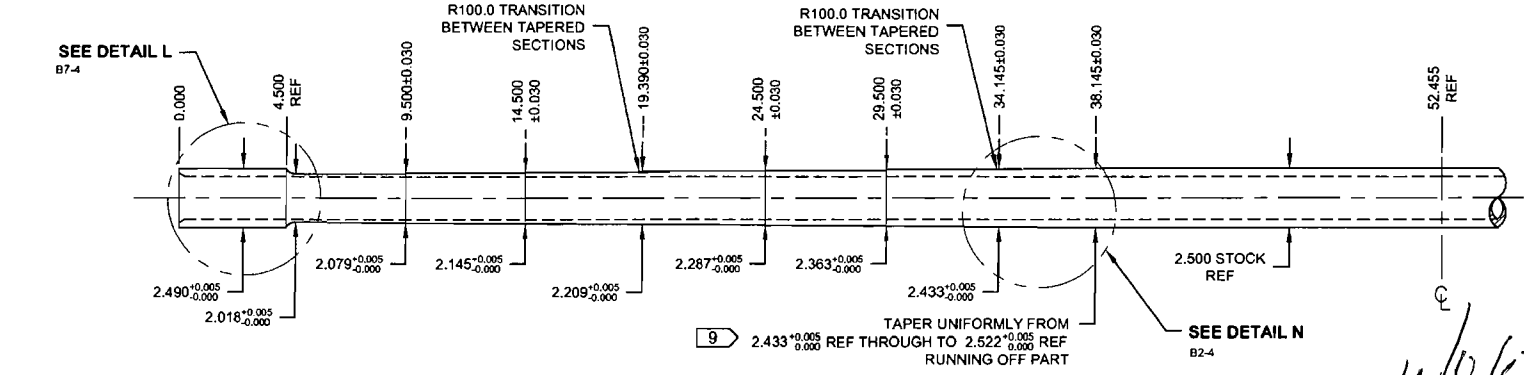
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

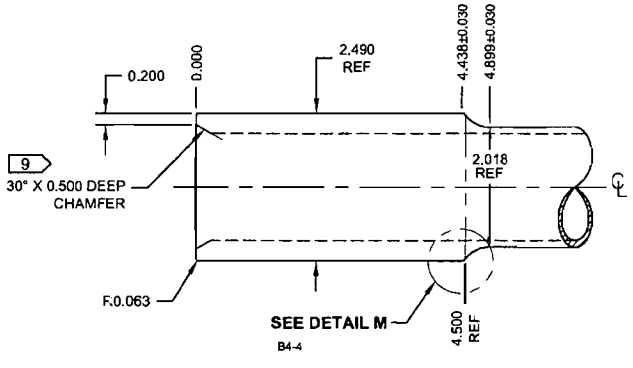
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

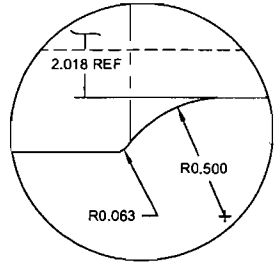


W0 62043

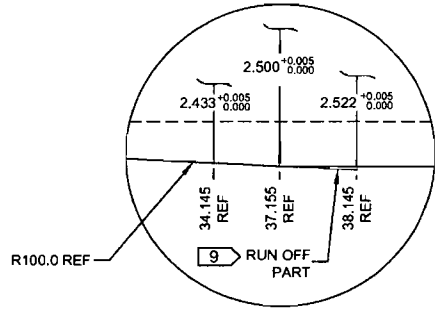
C **TURNING DETAIL**



C7-4 **DETAIL L: CROSSTUBE CUFF**
NOT TO SCALE



B6-4 **DETAIL M: CUFF TRANSITION**
NOT TO SCALE



C4-4 **DETAIL N: TAPER RUN-OFF**
NOT TO SCALE

RELEASED
08/11/12

DESIGN		**DART AEROSPACE LTD**	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG. APPR.		D206-667-243	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD	

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

REFERENCE ONLY

5.0 PARTS LIST

Item	Qty -011	Qty -013	Qty -015	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description
	X									D206-667-011	SPACER BLOCK KIT
		X								D206-667-013	NUT PLATE KIT (-101/-103/-105/-203/-205)
			X							D206-667-015	NUT PLATE KIT (-201)
				X						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
					X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
						X				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
							X			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
								X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
									X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1				1						D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2					1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3						1				D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD
4							1			D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT
5								1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6									1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10				*2	*2	*2		*2		D2891-1	SUPPORT
11							*2			D2892-1	SUPPORT
12									*1	D2894-1	SUPPORT
13				*2	*2	*2		*2		D2856-400-694	ABRASION STRIP
14							*2		*2	D2856-400-773	ABRASION STRIP
15									*1	D2856-600-851	ABRASION STRIP
16				*4	*4	*4		*4		MS21920-20	CLAMP
17							*4		*4	MS21920-22	CLAMP
18									*2	MS21920-24	CLAMP
19				4	4	4		4		AN5-32A	BOLT
20							4		4	AN5-34A	BOLT
21				4	4	4	4	4	4	MS21042L5	NUT (OR MS21042-5)
22				8	8	8	8	8	8	AN960JD516	WASHER
23									*2	D3190-1	CHAFING SHIELD
30	8									AN4-6A	BOLT
31	8									AN4-7A	BOLT
32	16									AN960JD416	WASHER
33	2									D3193-041	SPACER BLOCK ASSEMBLY
40		2		*2		*2	*2	*2	*2	D2873-043	NUT PLATE
41		2		*2		*2	*2	*2	*2	D2873-045	NUT PLATE
42			2		2					D2872-043	NUT PLATE
43			2		2					D2872-045	NUT PLATE
44		10		10		10				AN5-7A	BOLT
45		10	10		10		10	10	10	AN5-10A	BOLT
46		4	4	4	10	4		4		AN5-30A	BOLT
47		4					4		4	AN5-32A	BOLT
48		18	18	10	12	10	10	10	10	AN960JD516	WASHER
49		4	4		6					MS21042L5	NUT (OR MS21042-5)

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/241/143/243, & D407-667-145/245 ASSEMBLIES ABOVE

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ACUREN

LIQUID PENETRANT TEST REPORT

P- 05499

PAGE 1 OF 1

CLIENT: DART AEROSPACE | DATE: MAR/10/2011 | TIME: AM ☑ PM ☐

ATTENTION: LYNDA LACELLE/CHANTALE/IAN | ACUREN JOB NO.: 188-11-02109

ADDRESS: | PO/WO NO.: 13641

ABERDEEN RD. | WORK LOCATION: AS ADDRESS

HAWKESBURY, ON | ACCEPTANCE STD.: ASTM 1417/ASI-038 REV./DATE: 2005

PROJECT: WET-FLUORESCENT LIQUID PENETRANT INSPECTION ON 4 "CROSS-TUBES" OF THE

ITEM(S) EXAMINED: SEE BELOW

JOB DESCRIPTION | PROCEDURE NO. LT003 REV./DATE 2008 | TECHNIQUE NO. LT003 REV./DATE 2008

PART NO. | MATERIAL ALODINE ALUMINIUM THICKNESS N/A

SCOPE: PERFORMED A WET FLUORESCENT LIQUID PENETRANT INSPECTION ON 100% EXTERNAL SURFACE

TEST DETAILS

METHOD	☑ FLUORESCENT	☐ VISIBLE		☑ WATER WASH	☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
FAMILY BRAND	MAGNAFLUX			BLACK LIGHT S/N 13798	☑ OUTPUT > 1000 µ W/CM² ☑ AMBIENT < 2 fc
PENETRANT	ZL-67	MINIMUM DWELL TIME	10 MIN.	LIGHTING EQUIP.	☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT>100 fc @ SURFACE
PENETRANT REMOVER	H2O	MINIMUM DRY TIME	>10 MIN.	OTHER	
DEVELOPER	SKD-S2	MINIMUM DWELL TIME	10 MIN.	LIGHT METER S/N	CAL DUE DATE MAR/2011
DEVELOPER TYPE	☑ NON AQUEOUS	☐ AQUEOUS	☐ DRY		

TEST SURFACE

SURFACE CONDITION	☐ AS GROUND	☐ AS WELDED	☐ MACHINED	☐ SHOT BLASTED	☑ CLEAN BARE METAL
SURFACE TEMPERATURE	☐ < - 4°C/ 20°F	☐ - 4°C/ 20°F TO 10°C/50°F		☑ 10°C/50°F TO 52°C/125°F	☐ > 52°C/125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

1	CROSSTUBE W.O. ID 66402	✓
2	CROSSTUBE W.O. ID 66403	✓
3	CROSSTUBE W.O. ID 66405	✓
4	CROSSTUBE W.O. ID 67043	✓

ITEM ID: D206-667-103BL FWD
ITEM ID: D206-667-103BL FWD
ITEM ID: D206-667-203BL AFT
ITEM ID: D206-667-203BL AFT

NO RELEVANT INDICATION WAS DETECTED AS PER APPLICABLE STANDARD.

11:03:11

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE: Ian Tilley (PRINT) | Ian Tilley (SIGNATURE) | DTR # E44638

TECHNICIAN (SIGNATURE): | REPORT REVIEWED BY:

NAME (PRINT): YVES DESROSIERS | NAME | INITIALS

1ST TECHNICIAN: CGSB LEVEL 2 SNT LEVEL 2 CGSB REG. NO 3049

2ND TECHNICIAN: CGSB LEVEL SNT LEVEL CGSB REG. NO

WHITE – CLIENT COPY CANARY – OFFICE COPY PINK – TECHNICIAN COPY GOLD – OFFICE COPY